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Observations on the General Colour and the occasional Variations in the Plumage of Birds.

By the Rev. Alfred Charles Smith, M.A.

My attention having been directed last year to the remarkable change in the colour of the plumage of a blackbird, as detailed by me (Zool. 3576), and commented on in a subsequent number (Id. 3665); I have pursued my inquiries on the subject a little further, with regard to the general colour of the plumage of birds, and the varieties so often met with. The subject is one of exceeding interest; and though I cannot pretend to have elicited any new facts, or to have made any new discoveries, I will submit my observations (such as they are) to the readers of the 'Zoologist,' together with a list of such varieties as I have been able to ascertain; hoping that the former may induce some one to work out and more thoroughly investigate this subject, and that the latter may be serviceable to him in so doing.

In my former paper, above referred to, I had occasion to describe the growth of a feather, as detailed by Malpighi and other anatomists, and I then looked forward to this season of the year, when I might have excellent opportunities for more closely watching, than I had hitherto done, the gradual but very rapid development of feathers in the nestlings which now abound in our shrubberies and gardens. The nests to which I have chiefly confined my attention are those of the blackbirds and thrushes, both on account of their abundance and easiness of access, and especially on account of the superior size of their young inmates; and I have been extremely interested in watching the nestlings from the first hour of hatching to the time of quitting the nest. To those unaccustomed to note these things, it is quite astonishing what a rapid increase the feathers make in a single day, and how very short a time elapses from the moment when the chick emerges from the egg, a blind, naked, shapeless creature, to the first covering of down, and the development of that down to the perfect feather, and the increase of that feather until the young bird is fully fledged, and able to shuffle off from the nest and hurry into the thickest cover, when the intruder rudely comes to pry into and examine his new clothing. But now the young bird, whose wings have already enabled him to flutter away out of our sight, though well covered with feathers, has by no means come to his full plumage, nor rivals his father's colours: some birds there are, indeed, so precocious, that very soon it would be difficult to distinguish them from their parents; but

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for the most part their colours are less defined for the first year, and many do not attain to their full plumage till the second or third, and some not till the fourth year, or even later than this; of which the golden oriole, the roller, the bee-eater, the capercaillie, the common heron and the Skuas, are conspicuous examples. Mr. Yarrell, in speaking of this, says, "though not believed formerly, it is now very well known that many birds build nests and produce young before they have attained their own adult plumage. Baron Cuvier has stated, that when the adult female bird differs from the male in the colour of her plumage, the young birds of both sexes, in their first feathers, resemble the female; the young males afterwards putting forth the colours that indicate their sex. When the adult male and female are of the same colour, the young then have for a time a plumage peculiar to themselves. The pheasant may be quoted in illustration of the first law, and the partridge as an example of the second. To these two, a third law may be added: whenever adult birds assume a plumage during the breeding season decidedly different in colour from that which they bear in the winter, the young birds of the year have a plumage intermediate in the general tone of its colour compared with two periodical states of the parent birds, and bearing also indications of the colours to be afterwards attained at either period." But whatever may be the first plumage given to the young bird, his time of moulting will come, when the old feathers are discarded and new ones come up in their place: I have elsewhere described how this takes place, and how the old feather does not drop out until it has led its successor into the hollow it is about to vacate. This regular annual moult takes place in the autumn, when the work of nidification is over, and before the general migration begins: at that moult the plumage assumed, though thicker and warmer, is not usually so brilliant in colour as the one thrown off; but again in the spring, the bird assumes his bright nuptial dress, not by throwing off his old feathers and assuming new ones, but by the "gradual wearing off of the lengthened lighter-coloured tips of the barbs of the feathers on the body, by which the brighter tints of the plumage underneath are exposed." And this is the method by which, as Tennyson sings,—

> "In the spring a fuller crimson comes upon the robin's breast;
> In the spring the wanton lapwing gets himself another crest:
> In the spring a livelier iris changes on the burnish'd dove."

And now that our bird is arrayed in the full dress assigned to his species, let us remark how beautifully Nature usually assimilates his prevailing colour to the general hue of his own locality. I cannot better exemplify this than by quoting the words of Blyth, in his Notes on White's Selborne. "The wood-snipe," he says, "is of the exact tint of the dead leaves over which it runs, the snipe that of the marsh, and the rail that of coarse and decaying vegetation in the ditch." "The ptarmigan," observes Mr. Mudie (and he might have added the mountain hare), "is lichened rock in summer, hoar frost in autumn, and snow in winter; red grous are brown heather, black game are peat-bank and shingle, and partridges are clods and withered stalks the whole year round:" a provision of course intended to furnish them with some means of eluding the piercing ken of their winged enemies. I might adduce farther instances of this, but it will be needless. Of course, the above statement does not apply to *all* birds, many of which delight the eye with their brilliant hues in direct contrast to the haunts in which they dwell; some of these do not need such a means of concealment, and others are compensated for their want of it by other methods of escape from their foes; but to every one its own peculiar garb is assigned. Nature, usually so uniform and undeviating in all her ways, has given to every species of bird its own particular colours, and this law is for the most part very strictly kept, insomuch that from a thousand specimens of any particular species, the probability is that in all the plumage would be exactly alike, even to the faintest and most minute markings. It will, however, be necessary to qualify this assertion by the addition of certain provisoes. 1. That the birds to be compared be of the *same sex;* because, in so many cases, the plumage of the males and the females of the same species is totally different: as in the kestrel, the chaffinch, the pheasant, &c. 2. That they be of the *same age;* because, as we have seen above, there are many birds which do not attain at first to their mature dress, but are often clad in less defined colours, and young males are frequently habited as females: as the sparrow-hawk, the bullfinch, and most of the duck tribe. 3. That they be compared at the *same season;* because there are many birds to whom Nature, in her wisdom and goodness, has assigned a summer and a winter dress, clothing them with dark or bright hues in the summer, and as winter draws near, assimilating their plumage to the snowy landscape, by a greater or less infusion of white in exchange for their dark clothing: of this the whole family of divers, the snow-bunting, and the ptarmigan are examples. So that in making a comparison of birds of the same species, we must see that it be at the same season, and that the birds to be compared are of the same sex and the same age; and then we shall almost invariably find that their plumage is identically the same in every individval.

To this rule, however, there are certain exceptions, of which the crossbills and the ruffs are very remarkable examples. Of the crossbills Bewick says, "their colours are extremely subject to variation; amongst a great number, hardly two of them are exactly similar:" and other authors, in describing different individuals, show that red, yellow, green, orange, and brown are the various liveries assumed by this very cameleon of a bird. Again, the ruff is another species of which Yarrell states "that scarcely any two of these males can be found of the same colour, which is very unusual among wild birds." But both the crossbills and ruffs are very peculiar birds in other respects, besides their diversity of dress; and perhaps, on another occasion, I may have something more to say of them. I adduce them now merely as striking examples of some *constant* exceptions to the law generally observed by Nature, in assigning to every distinct species its own peculiar garb, from which the individuals composing it would no more think of deviating, than would a soldier of one regiment of usurping the facings of another.

There is yet another peculiarity which may occasionally be seen, when the one sex assumes the dress of the other, to which it is not naturally entitled. This is more frequently seen in the hen pheasant, than in any other bird, which, scorning her own plain homely garb, aspires to the splendid dress of the cock, but these females are invariably barren. Another bird which occasionally delights in the same vagaries is the female of the black grous; and more might be mentioned. On the other hand, there are certain effeminate male birds which array themselves periodically in female costume: this is the case with many of the duck tribe, as related in a very interesting paper by Mr. Gurney, (Zool. 3116).

But though the despised sparrow never presumes to adopt the dress of the gay goldfinch, nor the proud goldfinch condescends to the dismal robes of the ignominious sparrow; yet we certainly do see occasional departures from Nature's ordinary rule, when certain individuals of various species seem to ignore the universal law, and, putting aside the colours usually assigned to them, array themselves in white, or some unwonted hue. Now these unnatural birds are, in my opinion, far from pleasing specimens of their species; I look upon them, in all cases, as miserable deformities. If they are so clothed from the nest (and, on inquiry, I find this is the case with by far the greater part of them), I consider them as no other than wretched abortions, the offspring of weak parents, unfit to rank with their fellows: and if they have assumed an unusual colour in after-life from any cause, this, too, must be from constitutional debility, whether superinduced by accident or any other cause. For I hold that in all these anomalous cases, an unwonted variety of colour betokens physical weakness, no less certainly than bright well-marked plumage usually betokens good health and strength. To pretend to account for these freaks of Nature, thus deformed from their birth, is to attempt to account for all deformities in the animal kingdom; these are the exceptions which prove the rule, how uniform and undeviating Nature's laws are.

There is a difference of opinion among naturalists as to whether or no these white or party-coloured varieties transmit their colours to their offspring. Mr. Waterton, in writing of the pheasant, says that he has never been able to perceive this; on the other hand, a correspondent in the 'Zoologist' states his conviction that such is the case, and brings very strong proof in support of his opinion, (Zool. 873): the fact (I suppose) being, that in some cases, though not always, the variety in colour is handed down from the parent to the progeny. In proof of this, Bishop Stanley also gives an account of some rooks which, for several successive years, occupied the same nest, and invariably produced two white ones, proving not only the hereditary colour, but also the weakness of the parent birds, four or five being the usual complement for a nest. Blyth goes still further than this, and states that "when creatures are taken from their particular natural haunts, a disposition in the next generation to vary in hue is commonly evinced more or less, according to the species; efforts, as it were, of Nature to accommodate the offspring to the change: and so remarkable is this in some species, that the breeders of white and pied pheasants declare that albino or mottled individuals may almost always be raised from an ordinarily coloured pair, by merely confining the latter in a room whitewashed, or splashed with whitening."

I confess I am not yet quite prepared to assent to this, to me, rather startling statement, though I do not forget the marvellous results of Jacob's somewhat similar experiments; and am well aware what almost incredible efforts Nature often makes to overcome obstacles, and produce her customary results. Of one thing I am quite convinced, that be this variation in colour hereditary or no, attainable at will or no, I should be far more inclined to destroy such innovators as degenerate, than to encourage them for the sake of variety.

With regard to those birds which, being at first of the natural hue, have afterwards assumed, either wholly or in part, a white or otherwise unwonted dress, there is much variety of opinion; and, indeed, much mystery seems to involve this change of plumage. The effect is frequently seen in different species, but the causes producing that effect in many cases lie hidden, although I think there can be little doubt that these changes spring from a variety of causes, not one having yet been started which will apply to any considerable number of the cases I have investigated. Amongst the many causes proposed by different naturalists for this occasional and unnatural change of colour, Montagu and Bewick unite in thinking that confinement is the chief; and it seems consonant with reason that this may sometimes be the case, as a caged bird necessarily loses all his natural habits, and is constrained to use only the prison diet, whatever that may chance to be. Again, in the case of a bullfinch which gradually became coal-black, Gilbert White attributed it to the hemp-seed upon which he was fed, concluding his account of it with this reflection,—"such influence has food on the colour of animals;" a conclusion, the universal truth of which I must take leave to dispute: for certainly this is not the invariable effect of that seed, inasmuch as birds fed entirely on hemp have retained their wonted colour, while others have become completely black, when fed upon canary-seed alone. A third cause, proposed by others in some cases, has been fright; and I have already stated my firm persuasion that a variation in colour has ensued upon great and sudden terror. In this I have been supported by many naturalists, and by no more conclusive proof (though it escaped my notice at the time) than the account related by Mr. Fennell (Zool. 565).

"*Zoologists* certant, et adhuc sub judice lis est."

But although we may prove that one bird is terrified until his hair turns white, and another eats hemp-seed till he's black in the face, and another is imprisoned till he's purple with rage or white with passion, yet we cannot imagine that any of these are the *usual* causes of the variations in colour which so frequently come under our notice; especially as the greater part of these instances relate to birds always at liberty, with which sudden fright can have little, and hemp-seed and confinement nothing at all to do. And even of birds kept in cages, numbers are daily frightened and fed with hemp-seed, and yet retain their usual dress; the variation in colour ensuing from either of these causes is the exception, not the rule. We must then look beyond them for the true cause. Now I have said above, that constitutional weakness seems to me to be the real root of the matter. I conceive that on a strong and healthy bird, none of the supposed causes above named would operate to the variation of its colour; but that on birds of peculiar weakness, these or any other external accidents or derangements of their natural habits do sometimes induce such unwonted hues, which perhaps are still oftener the result of debility alone, without any other particular promoting cause. Mr. Yarrell seems to be of this opinion; for in speaking of the common linnet (Brit. Birds, i. 554), he says, "males do not, in confinement, acquire the fine red colour which pervades the breast of a mature wild bird;" "the particular plumage assumed during the breeding season by many species, being a periodical indication of constitutional and sexual vigour." And again, in vol. ii. p. 101, in speaking of a young rook of a light ash-colour, mottled over with black, and with the quill and tail feathers elegantly barred, he says that upon the bird moulting, all its mottled plumage vanished entirely; and also adds, "this agrees with my observations: accidental varieties will generally be found to be smaller and weaker birds than those which are truly characteristic of the species; as these young birds increase in age, and gain constitutional powers, the secretions become perfect, and the plumage assumes its natural colours: the assumption of white feathers by old birds is probably the effect of the converse operation of this physiological law."

Presuming then that physical weakness is the radical origin of the varieties in colour so often seen, whether they are developed with or without any farther exciting cause, I come now to enumerate those instances of varieties in colour which I have been able to gather, with some few particulars regarding them; and I have been at some pains to collect all the instances of varieties for which I could find good authority, because I conceive, that if resulting from weakness, such deformities must occasionally occur in *every* species of bird: and I have little doubt, that if we had equal opportunities of observing them, we should find albino and mottled varieties among our rarer birds, no less than among the thrushes, blackbirds, sparrows, robins and rooks, which come so frequently under our notice.

Golden Eagle. "White varieties have been seen and recorded," *Yarrell.*

Peregrine Falcon. White varieties were so frequent as to cause, among naturalists, the introduction of a new specific name for them, under the impression that they were a distinct species from Falco Peregrinus; and hence they were called Falco albus. See Selby *in loco*.

Goshawk. "White varieties have been sometimes met with," *Selby*.

Sparrow-hawk. An example of a white sparrow-hawk was killed some years since in this county, and is now in the collection of a neighbouring gentleman. Another instance of a white sparrow-hawk occurring in Norfolk, is recorded by Mr. Edward Newton, (Zool. 3276).

Marsh Harrier. "Varieties of this species, with more or less white, are frequently found," *Selby*.

Tawny Owl. A curious variety of this bird, of a pale gray colour, is mentioned as having occurred near Worcester, (Zool. 2411).

Red-backed Shrike. Mr. Ellman records the occurrence of a specimen of this bird, of a uniform pale fawn-colour, at Lewes, (Zool. 2698).

Missel Thrush. White varieties are common, others are occasionally found with the wings and tail white; see Selby, Temminck, the 'Naturalist,' i. 189.

Song Thrush. White, cream-coloured, black and white and fawn-coloured thrushes are occasionally seen; see Yarrell, and Zool. 496, 2453.

Redwing. "White and cream-coloured varieties are sometimes found," *Selby, Yarrell*.

Blackbird. White, ash-gray, and cream-coloured varieties are often met with; see Yarrell, Selby, 'Zoologist.'

Ring Ouzel. "Varieties are sometimes found similar to those of the blackbird," *Selby, Yarrell*.

Hedge-sparrow. White, reddish buff, and piebald varieties have occurred; see Yarrell, and 'Zoologist."

Robin. This little favourite is also very subject to variation in the colouring of its plumage: white, pink, bluish gray, and mottled specimens have been noticed; see Yarrell, and 'Zoologist.'

Redstart. A milk-white variety of this bird is recorded by Mr. Curtler as having been killed by him, (Zool. 2699.)

Wheatear. Two instances of buff and white varieties of the wheatear are noticed in the 'Zoologist;' one shot near Worcester, (Zool. 1496), the other at Thetford, (Id. 2923).

Blue Tit. A white variety is recorded, by Messrs. Gurney and Fisher, as having occurred in Norfolk, (Zool. 2027).

Cole Tit. A variety of this bird, with the white mark on the nape of the neck continued over the head, is noticed (Zool. 3055).

Meadow Pipit. An albino variety, in the same nest with several of the usual colour and markings, is mentioned by Mr. Gray, as having occurred near Glasgow, ('Naturalist,' i. 116).

Skylark. Black, white and cream-coloured varieties are mentioned in the 'Zoologist' (2463), Stanley's Birds (ii. 15), and White's Selborne.

Woodlark. A black variety is recorded by Blyth; a pure buff-coloured variety by Mr. Tombs, as having occurred in Devonshire, (Nat. ii. 19).

Common Bunting. "Varieties in colour of this species are not uncommon, and I possess one which in colour resembles a golden yellow canary," *Yarrell.* (Zool. 2453).

Yellowhammer. A white specimen is recorded by Mr. Cordeaux, as having occurred near Canterbury, (Zool. 2851); and a buff one, by Mr. Clarke, as having occurred near Woburn, (Nat. i. 142).

Ortolan Bunting. " M. Temminck, M. Vieillot, and others well acquainted with this species, refer particularly to the variations that are occasionally found in the colours of its plumage," *Yarrell.*

Chaffinch. A beautiful and extraordinary variety of this bird, in which white, brilliant golden yellow, and cream-colour are the prevailing hues, is recorded by Mr. Newman, (Zool. 2298).

House Sparrow. White varieties must be known to every one: I have one which was sent me in the flesh. Black, cream-coloured, buff-coloured, and mottled varieties are also common; see Yarrell, Selby, 'Zoologist,' 'Naturalist.'

Greenfinch. A white variety is mentioned by Mr. Jesse in 'Scenes and Tales of Country Life.'

Goldfinch. Black varieties are mentioned by Bishop Stanley, (ii. 15); white varieties are also recorded.

Common Linnet. A cream-coloured variety, and another white and brown, are recorded in the 'Naturalist' (i. 210).

Twite. A pair of these birds, perfectly white, are recorded in the 'Zoologist,' (2953).

Bullfinch. No bird seems more liable to become black than the bullfinch. Gilbert White, Montagu, and Bewick give instances of this, as also do Bishop Stanley, and the 'Zoologist,' (2390, 2454, 2568). White and rose-coloured varieties are also often met with; see Yarrell, Selby, Bewick.

Starling. "Albino and buff-coloured varieties are not uncommon," *Yarrell.* See also Zool. 1550, 2229; Nat. ii. 20.

Raven. White and pied varieties are occasionally seen; see Yarrell, Macgillivray.

Carrion Crow. "Partially white ones have been seen," *Stanley*, (Birds, i. 84).

Hooded Crow. "Sometimes this bird varies in colour, and is found entirely white or black," *Selby*.

Rook. This bird is remarkable for the numerous varieties so often seen in its species; its large size, sable hue, and familiarity, rendering every such instance very conspicuous: white, pied, cream-coloured, gray, ash-coloured, light yellow, and maroon-coloured varieties have been recorded; see Yarrell, Selby, 'Naturalist,' 'Zoologist,' (2953, 3034, 3278).

Jackdaw. "White varieties are sometimes met with: others entirely black, or black and white, are mentioned by different authors," *Selby*. See 'Naturalist,' i. 159, 170.

Magpie. "Specimens varying in the colour of their plumage occur occasionally," *Yarrell.*

Jay. "Accidental varieties are sometimes found of a pure white, with the wing-coverts pale blue," *Selby*.

Nuthatch. A specimen perfectly white was killed in Norfolk in December, 1846, as recorded by Messrs. Gurney and Fisher, (Zool. 1601).

Swallow. "White and buff-coloured varieties are not uncommon," *Yarrell.* See also Zool. (2021, 2392, 2700), Selby.

Martin. "White varieties of this, as well as of the other species, sometimes occur," *Selby, Yarrell.* A pale fawn-coloured martin is also recorded; see Zool. 2021: Nat. i. 212, ii. 7.

Sand-martin. "White and yellowish white varieties of the sand-martin are occasionally obtained," *Yarrell.* See Nat. ii. 7.

Ring-dove. "Varieties spotted over the body with white are not uncommon, and are generally very handsome birds," *Yarrell.*

Common Pheasant. White, pied, and buff varieties are very common; see Yarrell, Selby.

Red Grous. "Varieties of a cream-colour, or with different degrees of white, are often met with," *Selby, Yarrell.* See Zool. 361.

Partridge. "Varieties in colour are very common; some exhibiting only patches of white; others are wholly white; and cream-coloured, or very pale buff-coloured varieties are also common," *Yarrell, Selby.*

Red-legged Partridge. A nearly white variety of this bird is recorded as having occurred at Wolverston Park, Ipswich, in 1850; (Nat. i. 142).

Peewit. "White, cream-coloured, and mouse-coloured varieties have occasionally been obtained," *Yarrell.*

Woodcock. "Varieties in plumage are not uncommon, sometimes with a portion of white, or entirely of a dull yellowish white or buff colour," *Yarrell:* and Bishop Stanley says, "woodcocks are now and then shot, of a delicate and uniform fawn-colour," (Birds, i. 83).

Common Snipe. A cream-coloured variety is recorded in the 'Naturalist,' i. 137.

Knot. A white specimen of this bird is recorded by Mr. Newman, as having been shot in February, 1851, near Maldon, in Essex, (Zool. 3116).

Land-rail. Varieties of this bird, with white feathers on the breast and wing-coverts, and with white wings, are mentioned, (Zool. 2772).

Water-rail. "A variety has been taken, which was pure white," *Yarrell.*

Moorhen. "The Rev. Mr. Lubbock mentions a curious variety, in which the back and wings were mottled with white," *Yarrell.*

Common Coot. "Varieties entirely white, and others only partially white, have been seen both in Norfolk and Lincolnshire," *Yarrell.*

Puffin. "White varieties occasionally occur," *Selby.* "Varieties in colour have been known to occur," *Yarrell.*

The foregoing list enumerates fifty-seven species of our British Birds, the varieties in whose plumage have been recorded, and, no doubt, the readers of the 'Zoologist' can in some cases add others from their own observations; proving that white, pied, and mottled varieties are not confined to a *few* only of our commoner birds. I might have adduced many other examples of these varieties in the commoner birds, both from personal observation, and from the testimony of ornithological friends; but I have preferred, as far as possible, to quote from Mr. Yarrell, Mr. Selby, and other ornithologists, whose authority is undoubted, and whose books bear witness to the instances adduced by me.

The above list refers to wild birds alone, or I might add to them the *pea-fowl*, which is occasionally seen to change to a white dress, an instance of which has occurred in my immediate neighbourhood: and the *common hen*, whose strange and periodical alternations of a snowy and a sable dress are recorded (Zool. 667, 726). But domestication, we well know, is the cause of many strange freaks in the colour of plumage. Thus, from the gray lag goose is descended our *domestic goose*, whose dress is more often white than any other colour: and Yarrell tells us that from the wild duck are descended two white varieties of *domestic ducks*. In the case of *pigeons*, too, descended from the rock dove, what a variety of colours has not domestication produced! But these are scarcely parallel cases; we cannot put wild and domesticated birds side by side, and apply the same arguments to both; for as our cultivated garden flowers bear no resemblance to their wild ancestors, or our grafted fruit-trees to the stocks whence they first came, so our domesticated birds soon lose all characteristics of their original forefathers.

ALFRED CHARLES SMITH.

Yatesbury Rectory, Calne,
June 30, 1853.

Note on the Singing of Birds in Spring and Summer in Ireland.—In the spring, choose one of those calm, clear, frosty days we so often have towards the end of February:—not a breath abroad; a dead unearthly stillness in the air; a clear blue sky overhead; a sun shorn of his heat, but not of his brightness. Now the wren revels, singing on the top of some bush, or darting from bough to bough with quivering wings; the robin pours out all his soul; the lark, as the poet hath it,—

> "Higher still and higher, from the earth now springeth,
> Like a cloud of fire the deep blue he wingeth,
> And singing still doth soar, and soaring ever singeth;"

the thrush excels in melody; the tender fauvette dares to trust himself with song on some spray, all diamond-tipped by the frost; the yellow-hammer utters his spring strain; while in the tops of the fir-trees the various tits keep up an incessant sawing; and between whiles, from some deep sheltered glade, the blackbird's mellow note is heard. For summer songsters, choose we a day opposite in many characters to this—a true summer's day—a sun almost vertical, a sky cloudless, or, at least, its azure broken but by a few small fleeces of a snowy whiteness, not a breath stirring, a blue glimmering haze, which might almost be handled, rising in waves all over the country; all the insect tribes disporting and dancing in the sun's beams; a balmy lazy feel in the air, a stilly calmness all around. Then take your station in the gorge of some mountain stream, the sides of the hill clad with trees, the streams fringed with bushes and brambles; on its banks, meadows studded with occasional tufts of yellow furze—from some rock in the stream you will hear the soft low song of the dipper, and the pleasing strain of the wagtails; from the brakes along its sides, the sedge-warbler incessantly warbles a rich medley; on the low meadows near the river-banks, you will see the titlarks rising and falling, singing merrily; the whitethroat in the hedges keeps up its miserable wail, changed, if disturbed, into a scolding note of alarm; on the tops of the bushes the buntings are ringing, ringing, revelling in the genial heat, and in the pastures below you will see the chats rising and falling in the air, at times pursuing their insect prey, then uttering their short song on wing, or perched upon the summits of the bushes; while the wheatear may be seen, now feeding on the ground, now rising for a short distance singing, and anon, perched on some old bank or wall, perking his tail, and scolding you for disturbing his solitude. In the woods above, you hear the sprightly song of the chaffinch, or the blackbird's mellow strain, floating softly on the summer air; in the tops of the trees you have the gentle song of the lesser willow-wren, or the harsh note of the green linnet; lower down in the branches the chiffchaff ceases not chip-chopping incessantly; there, too, may you hear the soft low coo of the ring-dove; and above your head, the swallows, gliding along, utter their low note of contentment. From the corn-field comes now and again on your ear the monotonous creak of the rail, or the plaintive twit-twitter of the quail; from the corn, too, springs the lark, and, as he rises higher and higher, redoubles his song. On the bluffs above, the ring-ouzel gives utterance to his simple strain; and high over all the towering song of the thrush is heard in all its surpassing melody. There is, or rather was, such a glen on the Dodder, where you might, with few exceptions, hear all these songsters. There, oft have I enjoyed this treat, when all things—the purling stream, the glorious scenery (magically softened by the glimmering haze), the calmness, the sweet songs, the solitude,—might almost make you fancy that you were in fairy land, or the far-famed Elysium of the ancients.—*J. R. Kinahan, in Report of the Proceedings of the Dublin Natural History Society.*

Unknown Eggs lately found in the neighbourhood of Norwich.—On the 5th of June, some boys, out for a trip on the Norwich river, observed a hole in the bank, between Coldham Hall and Woodsend, about 8 miles below Norwich. Supposing it to contain a nest, from some loose materials protruding from the aperture, they searched it, and discovered ten pure white eggs, deposited at some distance from the entrance. Three of these were broken in getting them out, and the rest were taken the next morning to a bird-preserver in this city; but, unfortunately, the boys could give no account of the nest itself. In shape, the eggs closely resemble those of the common swift, but differ from them in being much smaller, and in having a smooth shining exterior; and, before they were blown, the yolk appearing through the shell gave them a delicate flesh-coloured tint. They measure about 8½ lines in length, by 5½ in breadth, tapering towards the smaller end. The unusual number, and general appearance of these eggs, lead one to assign them to some bird hitherto unknown to breed in England.—*H. Stevenson; Norwich, June* 25, 1853.

Note on the Red-backed Shrike destroying Small Birds.—This morning a bird-catcher was following his vocation near Norwich, when a red-backed shrike pounced on one of his call-birds (a linnet), and attempted to carry it off, but being prevented from doing so by the linnet being fastened to the ground with a string and wooden peg, the shrike tore off the head of its victim, with which it made its escape. The bird-catcher then drew out from the ground the peg which held down the dead linnet, and left the dead bird lying in the net. In about half an hour the shrike again appeared, pounced upon the body of the dead linnet, and carried it off in its beak, with the string and peg hanging to it; the weight of the latter probably was the cause of the shrike not carrying its prey quite away, as it dropped it after flying about fifteen yards, when the bird-catcher again picked up the dead linnet and replaced it in the net. The shrike in the mean time retreated to some neighbouring bushes, from which it soon made a third pounce upon the nets, this time attacking the second call-bird, which was a sparrow. On this occasion, however, the bird-catcher was on the watch, and drawing his nets, captured the shrike, which proved to be an adult female of Lanius Collurio.—*J. H. Gurney; Easton, Norfolk, June* 28, 1853.

"*Could'nt! Cos he Sung so!*—Leaning idly over a fence, a few days since, we noticed a little four-year-old 'lord of the creation' amusing himself in the grass by watching the frolicsome flight of birds which were playing around him. At length a beautiful Bob-o-link perched himself upon a drooping bough of an apple-tree, which extended to within a few yards of the place where the urchin sat, and maintained his position, apparently unconscious of the close proximity to one whom birds usually consider a dangerous neighbour. The boy seemed astonished at his impudence, and after regarding him steadily for a minute or two, obeying the instinct of his baser part, he picked up a stone lying at his feet, and was preparing to throw it, steadying himself carefully for a good aim. The little arm was reached backward without alarming the bird, and Bob was within an ace of damage; when lo! his throat swelled, and forth came Nature's plea:—'A link—a link—a l-i-n-k, Bob-o-link, Bob-o-link! a-no-weet, a-no-weet! I know it—I know it! a-link—a-link—a-link! don't throw it!—throw it, throw it, throw it,' &c.; and he didn't. Slowly the little arm subsided to its natural position, and the despised stone dropped. The minstrel charmed the murderer! We heard the songster through, and watched his unharmed flight, as did the boy, with a sorrowful countenance. Anxious to hear an expression of the little fellow's feeling, we approached him, and inquired, 'Why didn't you stone him, my boy?—you might have killed him and carried him home.' The poor little fellow looked up doubtingly, as though he suspected our meaning, and with an expression, half shame and half sorrow, he replied,—'*Could'nt! cos he sung so!*' Who will say that our nature is *wholly* depraved after that, or aver that music hath no charms to soothe the savage breast? Melody awakened humanity, and humanity—mercy! The angels who sang at the creation whispered to the child's heart. The bird was saved, and God was glorified by the deed. Dear little boys! don't stone the birds."—*Clinton* (*U.S.*) *Courant.*

[From an American newspaper. Communicated by Mr. Yarrell, who adds that "the Bob-o-link of the Americans is the Rice-bunting (*Emberiza oryzivora*) of Wilson and Audubon."—*E. N.*]

Occurrence of the Mountain Finch (Fringilla montifringilla) *near Dorchester.*—This exceedingly elegant finch is seldom, so far as I can discover, seen anywhere but in the North of England, it being a native of the northern portion of Europe; but as one was lately shot in this county, I think it worthy of record in the 'Zoologist.' The specimen I allude to, a very fine male, and in good condition, was shot during the cold weather last winter, at Herringstone, near this town, the seat of Thomas Davis Bayly, Esq., and is now in the possession of a friend of mine in Dorchester.—*John Garland; Dorchester, July* 9, 1853.

[The brambling certainly occurs occasionally near London, and that sometimes in great numbers: during last March I found several frozen to death in my garden.—*Edward Newman.*]

Jackdaws taking the Eggs and Young of other Birds to feed their own Young with. By W. H. Slaney, Esq.

In the tenth volume of this journal (Zool. 3475), is an account of the destruction of eggs by two individuals of Montagu's harrier, in one of them the yolk, and in the other, the greater part of the egg and shell of a thrush having been discovered: but I have to bring a charge of a similar nature, and even of a more villanous character, against another bird, usually, I believe, not thought to commit such depredations, namely, the jackdaw. The noisy, chattering, and thieving propensities of this bird are well known, as well as the trouble it often occasions by building its nest down chimneys, which it frequently entirely fills up, so as to fill the whole house with smoke when an attempt is made to light a fire: but were this the only accusation against the jackdaw, or even pilfering a few stray articles to form its nest with, it might be forgiven; but the following acts are of a more serious nature.

Numerous pairs of jackdaws have taken up their abode about this place, and every year have built in the hollows of the old trees quite close to the house, more especially one pair, which took possession of a hole in an elm tree, but a few yards from the ground, and there, for several successive summers, hatched their young. This year, however, having previously had suspicions of their depredations, I desired that the hole in the tree might be closed up; on this being done, the jackdaws established themselves in an old ivy, a little further off, and there made their nest, in which might very shortly be heard the almost constant clamour of the young ones crying for food. Very near to the tree from which the daws had been ejected, and within a few feet of the stable-door, was a privet hedge, which, on being trimmed, disclosed the nest of a poor thrush, which the bird had to quit eight or nine times a day, owing to persons passing to the stable; but still she continued laying, and afterwards sitting, until she had hatched four eggs. The young thrushes were quite open to view; and though no accident befell the eggs, yet, early one morning, within a few days after their birth, the four little callow birds were all missing, although late the night before they were quite safe, and on the same morning the jackdaws had been seen pretty near the spot, though several hundred yards from their own nest, then full of young. I feel convinced, from the inquiries I made, and the caution I had previously peremptorily given, that no servant or other person had taken them; and it was only a short time before I found that the eggs and young disappeared as mysteriously from other nests, without a mark or vestige of the depredator being left. Still, there was no proof against the jackdaws; but the gamekeeper having stated he had no doubt of the fact, I desired that some traps should be baited with eggs: but in the first place I ought to relate some other circumstances connected with the subject.

Immediately under the spot containing the nest and young of the jackdaws, was a dry pit, at the bottom of which a pheasant had made her nest. This nest was perfectly open to view, and without even a bush or a nettle to hide it, although within a few yards there was plenty of rough stuff to have concealed it; the pheasant however preferred sitting in the most open spot, and had eleven eggs. For some time the pheasant sat on without interruption, the jackdaws above her keeping up a constant clamour, and flying backwards and forwards to their nest all day long. But shortly after the young daws were hatched, I one day perceived the pheasant's nest without the old bird upon it, and many tail and other feathers lying close by, as if she had been forcibly taken or driven away, which I at first suspected had been done by the foxes. Shortly after this, however, she again made her appearance, and resumed her sitting; but the next day but one she was again missing: there had evidently been a buffeting and scuffling, for many more feathers were left behind, and two eggs broken. The old bird once more returned to her nest, and hatched the remaining eggs. This mischief I conceive to have been the work of the jackdaws in trying to rob the poor pheasant of her eggs; and as she was near her time, and sat very close, hardly ever quitting her nest except for food, the jackdaws probably did not like to wait for her absence, but, as I suppose, attacked her on her nest.

Still I had only supposition to go upon; but in consequence of what the keeper had said, and the evil name he gave the jackdaws for stealing eggs, declaring them to be quite as bad as magpies and crows, I directed that several traps should be set on the tops of the cropped hedges and other elevated places, and covered over; with a number of small upright sticks stuck round the concealed trap, so that any bird coming to the eggs placed on it as in a kind of nest, would be compelled to alight on the trap. These traps had not been set many days before not only magpies, crows and jays were caught therein, but several jackdaws as well; thus proving their propensity to steal eggs, as the keeper had stated he knew to be the case.

After this, I desired the keeper to take the young jackdaws, four in number, and when he had done so, to wait for and kill the old ones, but not until he had secured the young ones, lest they should be left to starve. This he soon accomplished; and on shooting the old ones while returning to the nest, he found their mouths and throats filled with the mashed up remains of young birds,—pieces of legs, wings, beaks and feathers. These circumstances leave no possible doubt of the fact that jackdaws take the eggs and destroy the young of other birds, in order to feed their own young.

The depredations committed by crows, magpies, jackdaws, and other assailants of the eggs and young of game, and of various other birds, is so great, that it is quite surprising the destruction which thus takes place, and how numerous are the nests plundered before the eggs arrive at maturity. It is constantly the case that day after day accounts are brought in that such and such a nest has been destroyed; and yet partridges and pheasants seem to take a special delight in selecting the most dangerous places to form their nests in, frequently by a path or public road-side; and it is equally astonishing how they sometimes contrive to sit out their time and hatch their eggs, although the place is passed twenty times in the course of the day, and the hen bird but little concealed from observation, and almost always leaving a track up to her nest, thereby discovering the place she is sitting in. But occasionally a nest is robbed in so mysterious a manner, that it is impossible to discover by what means it is done, even when made in the most secluded places. I have lately lost several nests of wild-ducks' eggs, in a way not to be accounted for. The first had eight eggs, and was built amidst some fern and gorse, on a dry bank close at the back of the keeper's house, in a private spot, away from any thoroughfare. Here, after the duck had sat for a considerable time, six out of the eight eggs were one morning found to be gone, and the other two quite concealed beneath some dry leaves and grass; but not a mark of any kind could be traced near the nest, and the old duck was seen associated with some mallards and other wild ducks, which had succeeded in rearing their broods on a pool close by.

A few days after this, in looking near the same spot for the nest of one of the keeper's hens, another wild duck's nest was found, containing twelve eggs, on which the old one was sitting; this she continued to do for about ten days, when, upon the keeper's going to see how matters were going on, having previously put some tarred cording on four sticks around the nest in order to keep off the foxes, and after the placing of which the old duck continued safe on her nest, he found every egg gone, and not a bit of the shells, or the slightest mark, left near the spot. Shortly afterwards the old duck was seen on the pool with the other duck, mourning over their mutual disappointment, as, no doubt, their nests having been made so near to each other, and the two old ducks, often meeting when going in search of food, had talked over the anticipated affairs of the nursery, and the relative merits and beauty of their expectant broods; but, like other fond mothers, they were both in this instance doomed to find their hopes destroyed. I know not to what cause to attribute the destruction of the last lot of eggs, for upon those in the first nest being missed, I had directed that traps might be set upon some boards elevated above the ground; the traps were covered over, and a kind of nest made on the top of the trap, and baited with eggs: I therefore fully expected that I should shortly find a felon magpie, crow, or jackdaw in some of them, but after waiting for more than ten days, nothing whatever came to the traps.

Now, when the weight of a wild duck's egg, containing a young one just ready to be hatched, is considered, it seems almost impossible for any bird to have carried away every one of the twelve eggs, without leaving some marks behind, but nothing of the kind was to be seen; and from the bait in the traps not having been touched for so long a time, I am disposed to think that the depredator must have been some creeping animal that could not reach the eggs placed in the nest on the trap. But yet, how could such a number as eighteen eggs have been carried away without any being broken, or any track to the nests discovered? The extraordinary performances attributed to rats in stealing and carrying away eggs are well known; but I think they could hardly have taken so many without some being broken, or the place to which they were conveyed being discovered; though certainly there were a good many of both the common house-rat and the brown water-rat, not far off, and both kinds will take eggs, and have frequently been caught in traps baited with eggs. Again, many hedgehogs are frequently found in the bank where the wild ducks' nests were made, and in the adjacent covers; and these animals will not disdain to feed on eggs. For although I have said so much on their behalf, as innoxious animals, in a former number of this journal (Zool. 715), I felt obliged at last to give up their defence; but the same difficulty presents itself as to their being able to remove the eggs without leaving some marks behind.

Of the several broods of young wild ducks already hatched and on the pools, I have not unfrequently to lament the loss of one or more of the ducklings taken by rats and pike; but the destruction of whole nests of eggs in the mysterious manner before mentioned, is a calamity requiring great fortitude of mind to bear calmly.

Wm. H. Slaney.

Hatton Hall, Salop, July 4, 1853.

On the Reproduction of the Greater Spotted Cuckoo, (Cuculus glandarius, *Linn.*) By A. E. Brehm.*

It is well known to have been hitherto undecided whether Cuculus glandarius sits upon its own eggs or not. Even I myself, notwithstanding my somewhat lengthened sojourn in Africa, could for a long time learn nothing certain on the subject. I was well acquainted with the bird, its laughing magpie-like cry, and all its habits; and I knew that it usually dwelt among the thick, low, Mimosa-woods in which it is to be seen, generally in battle with another individual of its own species, as it flies, quick as an arrow, through the thickest bushes.

On the 5th of March, 1850, my deceased brother, Dr. Vierthaler, and myself, collected seven examples of the greater spotted cuckoo in a Mimosa-wood near Siut, in Upper Egypt. Among them was a female, with a fully-developed egg in the oviduct. Unfortunately, this egg was destroyed by the shot, and exhibited only broken fragments; these, which we sorrowfully contemplated, were bright green in colour, with darker brownish spots.

Here, however, was a slight advance towards a knowledge of the eggs, at least towards ascertaining the breeding-time, which, in Africa, varies so greatly, and is not confined to any particular month. Yet two years more went by ere I became clearly acquainted with the history of the mode of reproduction of this bird. On the 2nd of March, last year, I for some time attentively watched the motions of a greater spotted cuckoo in a garden near Thebes, in Upper Egypt. At last, I saw it slip into a large nest, placed upon a rather low Salicaria tree. After rather more than a quarter of an hour out it flew again, and straightway departed from the garden. I climbed up to the nest, and found it to belong to the Egyptian Corvus Cornix, and containing altogether six eggs. One of the crow's eggs had been recently broken. Among them I at once recognized two smaller eggs, belonging to some other bird, but nearly resembling those of the crow in size and colour. When I arrived at the boat, I perceived that these agreed well with the pieces of the egg extracted from the oviduct of the female cuckoo before mentioned: and, at the same time, in this respect, they confirmed the observations of Herr Pffarr Baldamus, namely, that the egg of the cuckoo (speaking of Cuculus canorus) is always of the colour of the eggs of the nest in which the parasite lays her own; for the eggs of the greater spotted cuckoo were quite the same in colour, though not in size, as those of the crow. They were like the eggs of our magpie, only more rounded and not quite so long.

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* Translated from Dr. Cabani's 'Journal für Ornithologie,' part 2, for the present year, and communicated by Philip Lutley Sclater, Esq., who observes that the article "is worthy of the attention of British ornithologists, as, according to Mr. Yarrell, 'every ascertained fact in the reproduction of the species among the cuckoos is a matter of interest.'"

This discovery would have been quite sufficient to settle the question of the mode of reproduction of this cuckoo, but on the 12th of March it was still further confirmed. In one of the village gardens, thickly planted with trees, as is particularly the case in Egypt, I was summoned to the chase by the clear-sounding, but, at the same time, inharmonious cry of an old cuckoo,—"kiekkiek—kiek—kiek." I obtained both the old birds, and soon found a young one also, which was being *fed* and *provided for* by hooded crows. After this, I began to ascend to all the crows' nests, and in one of them, in the before-mentioned wood near Siut, was really so fortunate as to find another cuckoo's egg on the 19th of March. Herr Apotheker Baedecker, of Witten, will forthwith figure these eggs.

After what I have stated above, every oologist will believe me that the eggs which I have described as those of Cuculus glandarius are genuine; and, should any one think otherwise, I may perhaps be allowed to ask him to publish his reasons for doubting it.

A. E. Brehm.

Notes on the Habits of the Green Sandpiper, (Totanus ochropus).—An adult female green sandpiper was killed at Saham, on the 14th of June last, after having been noticed in the vicinity for several days. As this bird was alone, and the breast not denuded from incubation, nor were the eggs at all larger than hemp-seed, it may be inferred that this species breeds very late. This case might be thought an exception, but I have noticed them at Saham and elsewhere, in this county, every month in the year except July, June 14th being the latest date, and August 15th the earliest, that I have observed them. Where they go to breed seems not yet to have been ascertained: the nest has been noticed once in Norfolk, and (as far as I am aware) there is no account of their breeding habits in any ornithological work. As far as my own observations go, it is a shy and solitary bird, more than one seldom being seen except in August, and then six is the largest number that are usually seen together. They resort to small streams more than to large rivers and stagnant pieces of water; and if they are in an open place, it is almost impossible to obtain a shot, as they fly up when you are within about a hundred yards, and settle again a little further away from the spot they are disturbed from. They appear to be much more common than they are usually supposed to be, being more frequent in August and May than at any other time; but yet are often seen in the winter months. As "the habits of this bird appear to be but imperfectly understood," I thought the above observations might be worth recording, as each fact that is observed tends to elucidate the subject. — *L. H. Irby; Saham, July* 9, 1853.

Note on the late appearance of the Common Scoter (Anas nigra) *in Norfolk.*—A few days since I had the opportunity of examining in the flesh a male specimen of the common scoter, shot at Hickling on the 20th of June. The bird was in good condition, and exhibited no symptoms of having been previously wounded, to account for its unusually late appearance. By reference to my note-book, I find that one was killed at Burlingham on the 11th, and another at Scottow on the 22nd of May, last year; but the present is the latest instance of its occurrence that has come under my notice.—*H. Stevenson; Norwich, June* 27, 1853.

Note on the Reproduction of the Frog (Rana temporaria). — Mr. Lowe's paper in the 'Annals and Magazine of Natural History' (see Zool. 3871) having attracted considerable attention, as the startling novelty of the positions laid down by him would naturally lead one to expect, I have waited patiently for some person more competent than myself, either to refute or satisfactorily corroborate such statements. With the exception however of Mr. Alfred Merle Norman, who has come forward in support of the fifth position, and Mr. Newman's very prudent and properly cautious observation at the end of Mr. Norman's statement (Zool. 3913), I see no remarks in reference to the matter. I therefore think I am bound to state that I can in many respects corroborate Mr. Lowe's and Mr. Norman's statements as to the reproduction of frogs without the presence of water; which I do, not giving any opinion on the doubts suggested thereby, but merely to aid the inquiry, in accordance with Mr. Newman's permission granted in the observation above mentioned. I had a wine-cellar, about 10 feet by 8, at the end and leading out of a back kitchen, below the level of a small garden, situate in the High Street in the midst of this town. There was only one door to the cellar, and one small window, opening on a little square space with a railing over it upon the level of the garden, the path of which was flagged with large paving-stones. I had a wooden shutter fixed on the inside of my cellar, to increase the facility of obtaining an equable temperature for the wine, and which was constantly kept up and fastened. I found some large frogs in it the first year I went to the house; these I had taken out and the cellar thoroughly cleaned. I am quite sure no others could have obtained access thereto through the window, and, of course, they could not through the two kitchens; yet, to my great surprise, the next year I found frogs in considerable numbers and of different degrees of size, some very small. They were again got rid of in like manner, and the cellar cleaned; but the same occurrence happened the next year. There was no saw-dust kept, the wine being packed on laths. I never could account for this, and leave it for any suggestions the readers of the 'Zoologist' may make on so generally interesting a subject.—*John Garland; Dorchester, June* 20, 1853.

Capture of the Spiny Cross-fish (Uraster glacialis) *in Dalkey Sound, Ireland.*—I have to record the capture in Dalkey Sound of the spiny cross-fish (*Uraster glacialis*, Linn.) The specimen was taken on the 19th instant, in a lobster-pot; its dimensions were as follow: —Length of rays in inches, 6¼, 7½, 8, 7¼, and 6½; first and second rays, from eye to eye, 15 inches, third and fourth 16¼ inches: disk, 1 inch by 1⅛. Colour: — back of rays bluish green, with purple patches; around the eyes and ends of the rays purplish; spines at end of rays purplish, near the disk white at their tips, at the base bluish green. In Forbes's 'British Star-fishes' I find this species recorded as occurring only on our western shores, if we except Belfast; I therefore thought this notice of its occurrence so far East would be acceptable to some of the readers of the 'Zoologist.' The specimen is at present in my possession, and is intended to be placed in the collection of the Dublin Natural History Society.—*John Robert Kinahan; Sea-view Terrace, Donnybrook, June* 22, 1853.

Occurrence of Muller's Top-knot (Rhombus hirtus) *in Dalkey Sound.*—I have also to record the occurrence of Muller's top-knot (*Rhombus hirtus*), captured in the same place on the 21st instant. The specimen was 5½ inches long, and has been presented to the same collection.—*Id.*

On the Geographical Distribution of the British Mollusca.

By William F. Templer, Esq.

I was much pleased on perusing the 'Zoologist' for the past six months, to observe the increase of local collectors and local lists of British land and fresh-water Mollusca. While the above may be considered as affording signs of an increasing interest in terrestrial Malacology, the absence of any notes on the marine Testacea indicates an indifference in those residents by the sea-side, who may happen to be correspondents of the 'Zoologist.'

If this does not arise from indifference, to what cause is it to be attributed? Is it owing to a supposition that the marine Mollusca are not to be procured without the trouble and expense of dredging? If so, I hope to prove the fallacy of such an idea. It is true, that many species cannot be obtained without dredging; but of even the deep-water species, many may be found thrown up in our sandy bays after heavy gales. The littoral zone, however, is at all events accessible; and during the periods of spring tides the higher regions of the laminarian zone may be explored. The mollusks inhabiting these zones, although for the most part small, are possessed of much beauty, and for that reason a larger share of interest than the mollusks of a larger growth. They likewise occupy a most important station in the marine Fauna of the British Isles. In some localities the minute Rissoas, as R. parva, and some of the Skeneas, as S. planorbis, are to be found in the greatest profusion. The best way for collecting them is to cut the weeds from the rocks and carry it home in bags; the weed having been well washed in fresh water, may be then thrown away, and the shells, mud, &c. at the bottom should be placed in a current of air to dry, after which they may be examined and sorted in a black tray, the minute shells being removed with a hair pencil. Two or three fine sieves will much assist the operation and save time.

Within the last few months the magnificent, and, to the collector, most invaluable work on the 'British Mollusca,' by Messrs. Forbes and Hanley, has been brought to a conclusion, and affords ample material for the extensive deductions so ably drawn in the Introduction. The peculiar geographical situation of Great Britain, and consequently its temperate climate, combined with its varied and extensive line of coast, tend to produce a list of the marine Testacea equally varied and extensive.

The following extract from the Introduction to the work expresses all I wish to bring before the conchological readers of the 'Zoologist.'

"Were a person desirous of accumulating personally and rapidly a collection of British mollusks, he would fail in his object if he confined his researches to any one locality, even though it embraced a considerable reach of coast and variety of sea bottom. Four districts at least would have to be visited. To the Channel Islands he would have to go for several forms almost extra-British: on the South-west coasts he would find not a few mollusks that he would seek for in vain in more northern or eastern seas: only on the West coasts of Scotland many species of great interest and peculiarity could be readily obtained. In the extreme province of the Zetland Isles he would gather some of our most remarkable rarities: and possibly after all he would have to visit as much of the northern half of the German Ocean as may be claimed for our Natural-History province, and the West coasts of Ireland, before his cabinets could be fairly filled."

This extensive system of dredging, which but few if any one person has accomplished, being completed, and the ponds, rivers, and running streams, and the hilly limestone ranges having been searched for the species frequenting such situations, the results would be as follows:—

Acephala Tunicata,	75	species.
Acephala Lamellibranchiata,	181	„
Acephala Pallibranchiata or Brachiopoda,	5	„
Pteropoda,	4	„
Gasteropoda Prosobranchiata,	221	„
Gasteropoda Opisthobranchiata,	113	„
Pulmonifera,	101	„
Cephalopoda,	14	„

Questions now naturally arise, as to the best way of obtaining a complete collection, and as to the advisability of seeking a British series of specimens, to the exclusion of extending our researches to the whole European Fauna.

A British collection must be more expensive than one formed from a wider range, inasmuch as many of the Mollusca, both Boreal and Lusitanian, attain their extreme limits in our seas, and are consequently much more rare. For example: Tellina balaustina may be procured from the Mediterranean at a much cheaper rate than a well-authenticated British specimen; and for the purposes of science and classification would be equally instructive. Again, a British collection, supposing it to be complete as such, would present many gaps in the classification, and, without the aid of foreign species, would be far from satisfactory to a scientific mind. Many also of our British genera are represented by only one species; and there is nothing more interesting than an extensive series of shells, all constant to the general features, and presenting so great a variety of specific differences: to me this is one of the most delightful portions of Natural History, to perceive order and regularity springing out of apparent chaos and confusion of forms.

I refer again to the work of Messrs. Forbes and Hanley, who, under the Conidæ, allude to an instance illustrative of my meaning.

"To a person unacquainted with exotic, and at the same time unversed in fossil Conchology, the association of the fusiform shells often called Pleurotoma with Conus will appear unnatural. There is really a very complete passage between them and the true cones; although the extremes of each have little besides the possession of a spire and the canaliculated aperture in common."

I will now conclude with a few words as to the remedy for the above disadvantages. I propose that collectors should endeavour to form a European instead of a mere British collection. This would greatly extend the number of species, and would lead to a much more correct knowledge of the habitations and classification of the Mollusca. The continent of Europe, especially France, the Rhine, Belgium, Holland, Switzerland, and Italy are as well if not better known than many parts of our own country, and to naturalists offer much greater advantages. The wet and gloomy gorge of the Tamina in Switzerland, all the way from Ragatz to the baths, abounds in various mollusks, and the Clausilias, hanging from some of the walls in thousands, apex downwards, quite fringe them with a drapery of living forms. Again, at Nice, in Italy, I have been informed, that during the winter months, a constant system of dredging is carried on in the bays; and Dr. Johnston, in his 'Introduction to Conchology,' alludes to more than one species of mollusk being sold in the markets for food, in some of the Italian towns.

If British naturalists, during their visits to the continent, would collect all the shells that they could procure, and a Society were formed for exchanging the peculiarly British forms of Mollusca and marine shells with continental naturalists, I have little doubt that ere long the beneficial results arising from such a Society would be witnessed in the more extensive collections, and by the presence of finer specimens and more abundant forms of many of the genera now either poorly represented or altogether wanting; until at length our cabinets would approach to a perfect blending of colours in the prismatic scale, and it could not be said, here the genus Buccinum ends, and here begins the genus Fusus; but rather that Fusus should be the link, as it is, leading from Buccinum to Trophon. Nature abhors gaps, as much as she has been said to abhor a vacuum.

William F. Templer.

Ilfracombe, July 8, 1853.

Notes on the Habits of Sepiola vulgaris. By P. H. Gosse, Esq.

My notions of the Cephalopoda, derived from figures of the various species in books, were anything but agreeable. I thought of them as hideous, repulsive, fierce, atrocious creatures, hated and feared whenever seen. But an acquaintance with the pretty Sepiola vulgaris has not a little modified these ideas; and its beauty, sprightliness, and curious habits have made it quite a favourite pet among the denizens of my aquarium. I take it in considerable numbers in Weymouth Bay, by means of the net known as a "keer-drag," which rakes the bottom. It is a little creature, rarely exceeding an inch in length; though the extensibility of the arms somewhat varies its dimensions.

When we turn out two or three from the net into a pail of sea-water, they are at first restless and active. They shoot hither and thither, as if by a direct effort of will, but in reality by the impulse of rapid and forcible jets of water, directed towards various points from the mouth of the flexible funnel situated beneath the body. After a few moments they suspend themselves in mid-water, hovering for many seconds in the same spot, scarcely moving a hair's breadth either way, but waving their large circular swimming-fins rapidly and regularly up and down, just like the wings of an insect. Indeed, the resemblance of the little Cephalopod, in these circumstances, to a brown moth hovering over a flower, is most close and striking, and cannot fail to suggest an interesting comparison. The body is held in a horizontal position, the large protuberant eyes gazing on either side, and the arms, grouped together into a thick bundle, hang freely downwards. If you essay to count these organs, you find only eight; and even if you are aware that one of the characters of the genus is to have ten, of which two are much longer than the rest, you may search for these latter a long time in vain. Of course I mean during the life and health of the animal, when its impatience of being handled presents obstacles to a very accurate investigation; you may then turn it over and over with a stick, and look at the bundle of arms from above and below in turn, now grouped together, and now thrown all abroad in anger at being teased; still you can make out but eight. It was not until after many trials that I at length caught a peep at the missing organs — the pair of long arms, and discovered that it is the animal's habit to carry them closely coiled up into little balls, and packed down upon the mouth at the bottom of the oral cavity. If we manage to insert the point of a pin in the coil, and stretch out the spiral filament, the little creature impatiently snatches it away, and in a twinkling rolls it up again. A zealous votary of the circular system would seize on this analogy with the spirally folded tongue of a moth, and triumphantly adduce it as additional proof that the Cephalopoda represent, in the Molluscan circle, the Lepidoptera among insects.

While thus hovering motionless in the water, the Sepiola presents a fair opportunity for observing its curious transitions of colour, which are great and sudden. We can scarcely assign any hue-proper to it. Now it is nearly white, or pellucid, with a faint band of brown specks along the back, through which the internal viscera glisten like silver. In an instant the specks become spots, that come and go, and change their dimensions and their forms, and appear and disappear momentarily. The whole body, arms, fins, and all, the parts which before appeared free, display the spots, which, when looked at attentively, are seen to play about in the most singular manner, having the appearance of a coloured fluid, injected with constantly varying force into cavities in the substance of the skin of ever-changing dimensions. Now the spots become rings, like the markings of a panther's skin; and as the little creature moves slightly, either side beneath the fin is seen to glow with metallic lustre, like that of gold leaf seen through horn. Again, the rings unite and coalesce, and form a beautiful netted pattern of brown, which colour increasing, leaves the interspaces a series of white spots on the rich dark ground. These and other phases are every instant interchanging, and passing suddenly and momentarily into each other with the utmost irregularity. But here is a change! One is hovering in quiescence, his colour pale, almost white; one of his fellows shoots along just over him; with the quickness of thought, the alarmed creature turns from white to an uniform deep brown, the rich full colour suffusing the skin in a second, like a blush on a young maiden's face. The hue is very beautiful; it is the fine, deep, sienna-tint of tortoise-shell; a substance which, indeed, the mingling clouds of brown and pellucid horn closely resemble in the intermediate phases of colour.

Hitherto we have seen the Sepiola only in the pail of water into which it was turned out of the net. After a little while it drops upon the bottom, and, crouching up, remains motionless; if you rouse it, it will again swim for a few moments, but presently seeks some corner, into which it thrusts its rear, and huddles up as before. This is all that you will see of its habits under such circumstances, for in all probability the morning will reveal your little *protégé* a lump of white jelly, dead and stiff, with uncoiled arms, on the naked floor of his prison. But introduce him while in health into an aquarium, where living sea-plants are perpetually revivifying the water, and where the bottom, varied with sand, gravel, and pieces of rock, imitates the natural floor of the sea, and you will soon see other particulars in the economy of our little friend, which will, I doubt not, charm you as much as they have pleased me.

The Sepiola is a burrower; and very cleverly and ingeniously does it perform a task which we might at first suppose a somewhat awkward one,—the insertion of its round corpulent body into the sand or gravel. Watch it as it approaches the bottom, after a season of hovering play, such as I have described. It drops down to within an inch of the sand, then hangs suspended as if surveying the ground for a suitable bed. Presently it selects a spot; the first indication of its choice being that a hollow about the size of a silver fourpence is forcibly blown out of the sand immediately beneath the group of pendent arms. Into the cavity so made the little animal drops; at that instant the sand is blown out on all sides from beneath the body backward, and the abdomen is thrust downward before the cloud of sand which has been blown up settles, but which presently falls around and upon the body. Another forcible puff in front, one on each side, and another behind, follow in quick succession, the fine sand displaced at each blast settling round the animal, as it thrusts itself into the hollow thus more and more deepened.

I was not at first quite sure by what agency these blowings, so admirably effective and suited to the purpose, were performed. The jet in front I readily attributed to the action of the fleshy funnel projecting from beneath the mantle on the breast; but I did not see how this could blow a stream directly backwards. I therefore put one of my pets into a vessel with glass sides, which was furnished with the requisite sand and water. I at once saw that the funnel was indeed the organ employed, and the only one in every case; and perceived its beautiful adaptation for the work it had to do, in its extreme flexibility. This organ is very protrusile, and being perfectly flexible, its orifice can be, and is, at will pointed in any direction, so as to blow the jet of water forward, backward, or to either side at pleasure.

It frequently occurs, of course, that small stones are mingled with the sand, or the animal may find it convenient to burrow in the loose gravel. In either case the arms come to the aid of the funnel, the sucking disks with which they are furnished being made to adhere to the stones, which are dragged out and thrown aside. You may suppose this to be a clumsy expedient, but you would think differently if you saw it: the rapidity with which the arms are thrust under the body, and drawn out, bearing pieces of stone of comparatively large size, and the graceful ease with which they are then thrown forward, discharging and dropping the burden, impress the mind with admiration of the beautiful fitness of the organization for the requirement.

This use of the funnel, and of the sucking arms, so different from their normal purpose, affords additional examples of that Divine economy in creation, which, when a new function is ordained, does not always form new and special organs for the necessity, but adapts some already employed in other service for the new work; while, still, both the one and the other function are fulfilled with such perfection, as shows that every emergency was foreseen and provided for in the mighty plan, and that it was not for want of resources that distinct actions are performed by the same instrumentality. We admire the skill of the artisan who can effect different operations with the same tool, especially when we see that each kind of work is of faultless excellence.

The ordinary employment of the sucking arms is no doubt the same as in other Cephalopoda, the capture and retention of prey. Of this I saw an instance in the case of one of my Sepiolæ which had seized a shrimp (*Crangon trispinosus*), a sand-burrower like itself, and was, when I saw it, holding it firmly against the horny jaws, which were devouring it. The discharge of ink through the funnel I have also witnessed, though this is far from being a frequent action with this species. One of them that had been for a day or two in an aquarium, and was evidently at home there, I put into another vessel. No other animal was present, but the strangeness of the new abode evidently frightened it; it darted about in manifest alarm and excitement, and presently shot forth from its funnel a cloud of inky fluid to a distance of several inches; another and another discharge succeeded in rapid sequence, and it was not for some time that the animal recovered its equanimity. It did not appear to me that this fluid could be of much service to the little creature in the way of concealment; for although the matter was tolerably copious and densely black, it did not diffuse itself in the water, but remained in masses, and when moved with a stick was drawn into slimy strings.

Perhaps the facts above recorded may not possess to others the novelty that they had to me. Dr. Johnston, in his admirable 'Introduction to Conchology,' has not included any species of Cephalopoda in his enumeration of burrowing Mollusca; nor have I ever read of any that were known to possess the habit. I ought to have said that it takes place to no greater extent than to bring the animal just level with the surface of the sand, which is generally thinly spread over the posterior part. The eyes and the dorsal edge of the mantle are always exposed; and if we carefully heap the sand over these parts, it is in a moment blown away by the action of the funnel, or removed by the undulation of the mantle-edge.

Among the many hundreds of marine animals which have stocked the aquarium at the Zoological Gardens in the Regent's Park, I have sent up a dozen or more of the Sepiola, where I hope they may live long, and entertain many visitors with their amusing habits and pretty appearance. P. H. GOSSE.

Weymouth, June 28, 1853.

Entomological Localities. By J. W. Douglas, Esq.

(Continued from page 3690).

SCOTLAND.

"O Caledonia! stern and wild,
Meet nurse for a poetic child!
Land of brown heath and shaggy wood,
Land of the mountain and the flood,
Land of my sires! what mortal hand
Can e'er untie the filial band
That knits me to thy rugged strand?
Still, as I view each well-known scene,
Think what is now, and what has been,
Seems as, to me, of all bereft,
Sole friends thy woods and streams were left;
And thus I love thee better still."
Scott: —'Lay of the Last Minstrel.'

"Hear Land o' Cakes and brither Scots,
Frae Maidenkirk to Johnny Groat's;
If there's a hole in a' your coats
I rede ye tent it:
A chield's amang you taking notes,
And, faith, he'll prent it."
Burns.

It was in the beginning of August, 1838, that I yielded to the solicitations of a friend, and my own cherished desires, to visit the Scottish land of mountain and of flood. We were impelled to make the tour by an undefined romantic notion of seeing hills and lakes, more especially that district rendered classical by Scott's 'Lady of the Lake;' and once determined to go, our enthusiasm rose so high, that if the antipodes had been our destination, the impulse we had received would have carried us there. On my part, there was, in addition, a strong desire to see something of the land of my fathers,— men who, if viewed by the light of our civilization, appear to have been little better than powerful ruffians, yet, judged by the standard of their own time, show no cause why I should be ashamed to own them as my ancestors, but rather, make me regret that so noble a stock should have produced such a degenerate scion. At any rate, they were earnest men, doing what they had to do with all their might;

in this, if in nothing else, affording a lesson to the best of us.* Entomology was beginning to obtain my attention, and, although in a very subordinate degree, had some influence in tempting me northward. The results in this respect, I having so many things besides insects to observe, were not much, the greatest of them being, perhaps, a strong impression of the value of Scotland as a hunting-ground for entomologists. I have mentioned these particulars to show that however much a tourist may be occupied with the sights and sounds of the country through which he is going, he may always keep his eyes open for any illustrations of its Natural History that *will* come in his way, whether he look for them or not. To a genuine lover of Nature, with but a limited time at his disposal, I can imagine nothing more enchanting or enticing than to sojourn for a summer month or two among the moors and forests of Perthshire. There would be now little variety of incident by the way; but the entomologist would have no difficulty in staying at places where he might collect to the best advantage, live like the natives, without wheaten bread, and with but little animal food, and find the change to a simple diet vastly to the benefit of his health.

Within the last few years several collectors have visited Scotland, and have discovered many species either new to our lists, or very rare. Among these pioneers Mr. Weaver deserves especial mention, not only for breaking ground in a new direction, but also for his discoveries. He evidently belongs to the Natural Order of "Hunters," which has Nimrod at one end and Gordon Cumming at the other, although, by force of circumstances, he has fallen upon one of the milder forms of sport; for, without any disparagement, the sporting phase of entomology may surely be said to be the most attractive to him, when we consider the years during which he had made collecting his occupation. He is a worthy example of what a man can do if the internal impetus be strong enough to carry him onwards.

But there is yet a vast deal to be done, both in the explored and unvisited districts of Scotland; the smaller Lepidoptera, for instance, being all but unnoticed: it is more than probable that among them, as well as the larger kinds, in Coleoptera and other Orders, many species known in the North of Europe, or alpine countries, or altogether new, are yet latent here. I need, surely, say no more, to tempt some of those who have time and means, to breathe for a few months the mountain air: I am satisfied the harvest reaped must be good, if not great.

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* "And none at that time durst strive with a Douglas, nor yet with a Douglas's man, for if they did they got the worse."—*Notes to 'Lady of the Lake,' Canto V.*

As with a sparrow in a corn-field, it will be difficult for a visitor to such a rich country as Perthshire for instance, to decide whether to settle in one spot, or to move about. If he adopt the former plan, he will have the best chance of obtaining variety of species, and be able to attend to larvæ; but if he shift his quarters, he will be likely to find some insects that he would not get if confined to one locality. Either method has its advantages, but I would recommend the former.

My recommendation to explore Scotland for its entomological productions, may be addressed to her own sons even more than to the southern Saxons; for, with few exceptions, all the *spécialité* of her insect Fauna has been discovered by English visitors. Whether the somewhat notorious dislike of Scotchmen for anything that does not pay, has to do with the neglect of their native Entomology, I am not prepared to say; it cannot but be lamented that there is so much apathy in this direction. It may be only another phase of the spirit that induces most of us to neglect what is close at hand and easy of acquisition, and to patronise something else, because it is brought from the ends of the earth.

The following list of Lepidoptera may be deemed pre-eminently Scotch: a host of other species may be found, but I have restricted myself to mentioning some of the rarest or newest. Some of our finest Coleoptera have also been captured in Scotland by Weaver and others.

Polyommatus Artaxerxes
Erebia Blandina
Sphinx Pinastri
Acronycta Euphorbiæ?
Luperina furva
Spælotis cataleuca
Cryobia carnica (hyperborea, *Doub.*)
Hadena assimilis
„ rectilinea
Aplecta occulta
Plusia interrogationis
Scopula alpinalis
Eupisteria quinquaria
Charissa obfuscaria
Coremia munitata

Thera variata
Phæsyle flavicinctaria
Melanippe tristata
Cheimatobia autumnaria
„ filigrammaria
Emmelesia Ericetaria
Eupithecia Callunaria
„ cognata
Amphysa prodromana
Leptogramma Scotana
„ Parisiana
Peronea Caledoniana
Penthina Grevilleana
Sericoris Daleana
Euchromia Arbutana
Sciaphila Penziana

Sciaphila octomaculana
Coccyx cosmophorana
„ finitimana
Pamplusia subsequana
Stigmonota lunulana
Crambus Ericellus
Tinea picarella
„ ochraceella
Œcophora stipella
Gelechia solutella
„ boreella
„ galbanella
Depressaria Ciniflonella
Ornix Scoticella
„ Loganella
Elachista locupletella
Lithocolletis Caledoniella

J. W. Douglas.

Lee, June 30, 1853.

Note on Acherontia Atropos.—With reference to previous communications on this splendid Sphinx (Zool. 3716, 3777), I beg to observe that its periodical plenty has been frequently observed by myself in this neighbourhood, and especially two years ago, when they were remarkably (comparatively) numerous near Sherborne, in this county. In Honeycombe Wood, Sherborne, on the estate of the Earl Digby, the gamekeeper residing there took a considerable number of them; but both before and since that time they have been looked upon as very scarce. In Wood's 'Index Entomologicus,' the habitat is given as "Yorkshire and Cambridgeshire:" to this must be added our county of Dorset, in which, also, by the bye, a very large number of Lepidoptera mentioned in that work are also to be found. In the same year I observed also the common rose-chafer (*Cetonia aurata*) at Sherborne, in far greater numbers than usual.—*John Garland; Dorchester, June* 20, 1853.

Capture of Diphthera Orion in Hampshire.—I have just had a fine specimen of this rare and beautiful moth presented to me by a young lady. It was caught last night by her maid, without being injured. I have never heard of its capture in Hampshire before.—*William Henry Hawker; Horndean, Hants, June* 14, 1853.

Occurrence of Psecadia Funerella in Yorkshire.—Both this summer and the last I have obtained Psecadia Funerella at Richmond, Yorkshire, but not in any number. I beat it out of hazel on both occasions.—*John Sang; Darlington, June* 23, 1853.

Occurrence of Hypercallia Christiernana at Castle Eden.—The year before last, about the end of June, I was fortunate enough to capture a fine specimen of Hypercallia Christiernana in Shotton Dean, Castle Eden. It was beaten out of grass on an exposed hill-side. I have since been unable to meet with it.—*Id.*

Note on a Monstrosity in the Earth-worm, (Lumbricus terrestris).—A man residing in this place has brought me a monstrosity in an earth-worm, (*Lumbricus terrestris*). The worm is two inches in length, and at about half its length, a second tail bifurcates: the two tails are of the same length and size, but the second leaves the original one at an acute angle, and is not of so bright a colour. — *William Thompson; Weymouth, July* 5, 1853.

Proceedings of the Entomological Society.

July 4, 1853.—Edward Newman, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors:—The 'Zoologist' for July; by the Editor. The 'Athenæum' for June; by the Editor. The 'Literary Gazette' for June; by the Editor. The 'Journal of the Society of Arts' for June; by the Society. 'Entomologische Zeitung' for April and May; by the Entomological Society of Stettin. 'Journal of the Royal Agricultural Society of England,' vol. xiv. part 1, 1853; by the Society. 'Exotic Butterflies,' part 7; by W. Wilson Saunders, Esq. 'Monographie des Guêpes Solitaires,' par H. F. de Saussure, Cahiers 5 et 6; by the Author. 'Abhandlungen über eine neue Daphnieart, Daphnia aurita, und über die Daphnia laticornis, *Jurine*,' von Dr. Sebastian Fischer: 'Abhandlungen über die in der Umgebung von St. Petersburg vorkommenden Crustaceenans, der Ordnung der Branchiopoden.und Entomostraceen,' von Dr. Sebastian Fischer: 'Ergänzungen, Berichtungen und Forsetzung zu der Abhandlung über die in der Umgebung von St. Petersburg vorkommenden Crustaceen,' von Dr. Sebastian Fischer: all presented by the Author.

R. F. Logan, Esq., of Duddingston, near Edinburgh, was balloted for and elected a Member of the Society.

Mr. F. Smith exhibited a large box of insects, captured this season in Scotland by Mr. Foxcroft, and sent as a sample of the species to be distributed among his Subscribers. There were many fine and rare species, including Notodonta Carmelita among the Lepidoptera, and Lamia ædilis among the Coleoptera.

Mr. Janson exhibited some insects taken on the occasion of the Society's visit to Mickleham, on the 25th of June; including the very rare moth, Pachetra leucophæa (or the species known by that name in England), and the following rare Coleoptera:—Claviger testaceus, Baris picicornis, and Sphærosoma Quercûs.

Mr. Tebbs exhibited Notodonta trepida, which was attracted to a light at Highgate.

Mr. Weir exhibited the scarce Aplota palpella, bred from Genista tinctoria, growing at Pembury, near Tonbridge Wells.

Mr. Hunter exhibited a living larva of Limenitis Sibylla, found on honeysuckle at Black Park.

Mr. Bond exhibited Hydrilla caliginosa, ♂ and ♀, lately taken in the New Forest.

Mr. Stevens exhibited the rare Curculionidous beetle, Plinthus caliginosus, from West Wickham; the exceedingly rare moth, Chariclea Delphinii, the larva of which he thinks he took last year near Arundel; and a specimen of Aplecta nebulosa, with a pollen-mass of a flower attached to each eye.

Mr. Waring exhibited two living mole-crickets; on which Mr. Douglas remarked that he once had two of these insects together in a box, and in a short time he found they were both dead, and greatly mutilated by each other.

Mr. Carter exhibited a Cucullia umbratica, with a number of flower-anthers attached to its head; and Aphelia pratana, with a Gordius? protruding from its abdomen.

Mr. Douglas exhibited Laverna ochracella, *Curtis*, bred from leaves of Epilobium hirsutum, in which the larvæ mine and make their cocoons,—a discovery of Mr. Jordan, of Teignmouth. He also exhibited the larva, pupa, and imago of Aræocerus Coffeæ, *Fab.*, a beetle belonging to the family Anthribidæ, which he had found in considerable quantity, feeding upon and doing great damage to mace imported from India.

Mr. Edwin Shepherd exhibited Retinia Turionana, from West Wickham; and Madopa Salicalis, Spilonota simplana, Chrosis Audouinana, Eupithecia Succenturiata, and Röslerstammia perlepidella, from Darenth Wood.

Mr. Westwood exhibited Hylobius Abietis, a beetle usually found on young pines, but this season discovered to be destructive to plum and peach trees in some districts; Coleophora Lusciniæpennella, reared from leaves of rose-trees, to which the larvæ had done considerable damage; Ourapteryx Sambucaria, with its pupa, directing attention to some peculiarities of the latter not hitherto noticed, as the dilation just above the very acute terminal point, and the number of small recurved hooks by which it attaches itself to the threads of its cocoon; and the imago and transformations of Lampronia corticella, *St.*, the larva of which feeds in the buds of raspberries, remarking especially upon the singular manner in which in the pupa the haustellum is rolled up laterally. He also read the following letter:—

"Small Arms Office,
"Birmingham, June 13, 1853.

"Sir,

"In the translation of that very interesting book of Kollar, on 'Insects injurious to Gardeners and Foresters,' I have sought for the history, habitat and description of those insects which infest and destroy the timber in our store-houses, and more especially those which attack walnut-wood in preference: but I find only a very slight reference to the Anobium, as being the cause of that I would proceed against. I am no entomologist, not from want of inclination, but of time; but being concerned in the care and conservation of a very large store of rough musket-stocks in the public magazines, every recurring season makes me more anxious to devise, if possible, some means of defence against the insidious enemies known amongst workmen under the general name of 'the grub.'

"It is upon these grounds that I trust you will pardon me for troubling you with a few questions. Some fourteen years ago I received valuable help and information from your Society upon the subject of an insect of the Bostrichus tribe, which I had unwittingly imported through Marseilles, and I am now induced to come again for help against our indigenous enemies.

"The beetles that I send inclosed are some that were taken off piles of walnut-stocks at Weedon, last week; I found some of the larvæ also—small white maggots, not larger than a horse-hair—but these were lost on the way home.

"1. Will you have the goodness to give me the proper name of this particular insect, and the family that it belongs to?

"2. At what season of the year does the parent beetle deposit her eggs?

"3. In what period of time from that are the larvæ hatched?

"4. Do they (the maggots) penetrate into the wood *immediately* after coming out of the egg?

"5. How long do they remain feeding in the wood, or lying dormant in the pupa state, before emerging as perfect beetles?

"6. Does the course of transformation of this tribe of beetles take place more than once in the same year?

"7. My observation leads me to the conclusion that the first palpable external sign of the grub having been in the wood, is the hole made by the perfect beetle in coming out: is this opinion well founded?

"Trusting to your good offices, I pray you to believe me,

"Sir,

"Your very obedient Servant,

"GEO. LOVELL,

"H. M. Inspector of Small Arms."

"J. O. Westwood, Esq."

Mr. Westwood exhibited the beetle referred to—Latridius lardarius, and said that the habits attributed to it did not agree with its economy, for it was well known to feed upon dried animal matter and provisions, and never upon wood; so that he thought it was not the real depredator, and he now awaited a reply to a communication to this effect which he had made to Mr. Lovell.

Mr. Douglas read the following note:—

"In the 'Entomologische Zeitung' for May, is a note by Dr. H. Hagen, upon a work published in London in 1773, intituled 'A Decade of Curious Insects: some of them not described before, shewn in their natural size, and as they appear enlarg'd before the Lucernal Microscope, in which the Solar Apparatus is artificially illuminated: with their History, Characters, Manners and Places of Abode; on ten 4to plates and their explanations, drawn and engraved from Nature by J. Hill, Member of the Imperial Academy.' This work, Dr. Hagen says, has been rendered notorious by the remark of Fabricius in his 'Species Insectorum' (Pref. p. 8),—'at damnandæ memoriæ J. Hill, qui decadem Insectorum Londini 1773, 4to, figuris fictitiis edidit.' After quoting on this point a remark of Percheron, in his 'Bibliographie,'—'C'est une question que l'on peut examiner de nouveau, maintenant que l'on possède tant de matériaux que Fabricius ne connaissait pas,'—Dr. Hagen goes on to say, for reasons which he gives, that he does not think the figures are fictitious; at the same time allowing, that even for the period at which they appeared, they are very bad, and that the descriptions are no better. As an example, he gives the remark upon Alucita pallida:—'A studious gentleman, very subject to the headache, sneezing one day with violence, as he was writing, saw some atoms a moment afterward upon a sheet of white paper that lay upon his table,' &c. This, he says, 'Westwood, in his 'Introduction' (vol. ii. p. 5), quotes without further remark, so that he does not seem to have suspected any deception. Stephens, and all the other English authors, entirely ignore Hill's work, and yet his figures are not worse than fig. 3, tab. 6, in Harris's 'Exposition,' from which Stephens, without any remark, makes out Cænis Harrisella, a new, and, to him, unknown species.'

"Dr. Hagen gives the following remarks upon Hill's figures, and adds that he should be happy to hear the opinions of other, *and particularly English, entomologists*, on this matter:—

"Tab. 1. Tenthredo luctuosa, from Uxbridge. (A small Hymenopteron).

"Tab. 2. Tenthredo variegata, from England. (A small Hymenopteron).

"Tab. 3. Sphex pectinipes, from Ireland. (Not to be made out).

"Tab. 4. Myrmeleon Formicarium, from France and Italy. (Doubtless M. tetragrammicum).

"Tab. 6. Cynips Quercûs-folii, from Norway. (Bad, but a Hymenopteron).

"Tab. 7. Ephemera Culiciformis, from Esher, in England. (Very bad, but certainly a small species of Perlidæ).

"Tab. 8. Ephemera rupestris, from London. (Very bad, but doubtless a small Phryganea).
"Tab. 9. Alucita pallida, from England. (A very small Thrips).
"Tab. 10. Alucita fulva, from England. (A Phlœothrips)."

Mr. Westwood said the figures were very bad, and that it was scarcely possible to recognise the species; and with regard to the insects which "the studious gentleman" sneezed, he thought it probable that he had previously drawn them into his nose by smelling flowers.

Mr. S. Stevens mentioned that one evening, at Mickleham, he saw many Noctuæ attracted to one particular thistle, and upon investigation he found it covered with Aphides and their sweet secretion.

Mr. Wing said he had seen both Noctuæ and Geometræ attracted by the secretion of Aphides on gooseberry-bushes; and Mr. Westwood alluded to the well-known attraction to bees of the honey-dew deposited by Aphides on the leaves of trees.

The President announced that a second field-day excursion of the Members of the Society and their friends, would be made to West Wickham Wood, on the 9th of July. —*J. W. D.*

The Entomological Society has had two field-meetings,—one on the 25th of June, at Mickleham, the other on the 9th of July, at West Wickham. On both occasions the weather proved wet, and only about half the usual number of Members attended; nevertheless some good captures were made, and the meetings passed off very pleasantly. One of our rarest Lepidoptera, — Pachetra leucophæa? — was taken by Mr. Janson, at Mickleham, on the former date.—*J. W. D.*

Proceedings of the Dublin Natural History Society.

June 10, 1853.—J. R. Kinahan, Esq., in the chair.

After the preliminary business, Mr. Andrews said that he had a variety of eggs, obtained on the west coast, to present to the Society, which, as soon as they were prepared, would be placed in the Museum.

Mr. Kinahan begged to present, from James Haughton, Esq., of Moorfield, Roebuck, the egg of the chiff-chaff, (*Sylvia rufa*); and from Thomas Barry, Esq., of Wexford, a species of shrew, which Mr. Kinahan considered to be Sorex rusticus. Also, an undescribed species of Entozoa, taken from the pectoral muscles of Tetraodon Pennantii. The discovery of that rare fish, taken at Ardmore, Waterford, had been recorded by Mr. Sargint. The Entozoon belonged to the genus Echinorhynchus. Mr. Kinahan also begged to present a bat, obtained at Feacle, county Clare, in August, 1852. He referred it, though in doubt, to the species Vespertilio Daubentonii, which has already been once obtained in this country, in Londonderry. The species now exhibited was captured by a cat, and is a male. Mr. Kinahan referred it to Daubentonii, for the following reasons: — 1. The number of false molars, 6 and 6, refer it to that division of the genus Vespertilio. 2. Its dimensions agree pretty well; they are: — length of head and body, 2 inches; tail, 1⅜ inch; spread of wings in a straight line, 8 inches; following the curvature of the wings, 10½ inches; length of ear, ⅜ inch. The points of difference are: — ears somewhat oval, deeply notched on the inner side, beneath the notch a fold, and another on the outside of the ear; tragus two-thirds the length of the ear, somewhat lanceolate, lobed at base on the outside: fur on the back black at the roots, reddish at the tips; underneath, roots of fur dark, tips light grayish; interfemoral covered with light hair: lines very numerous, and as well as membranes of wings, dark, without any mixture of reddish; upon the upper lip, on each side, is a distant moustache of soft, velvety, black hair, mixed with long bristles, which are also found beneath the chin.

Doctor Farran then gave the following notes on the discovery of Bulla hydatis. He said: — "I find that there is a notice of this shell in the 'Fauna of Cork,' compiled by Mr. Humphreys, as occurring in sand at Belgrove, East Ferry, Cork Harbour; but on making inquiries of that gentleman, he acknowledged that he had seen the shells, but never in a living state: and as to the specimens in the Institution, their locality was not noted, as he was not certain whence they were procured. I have it in recollection seeing this shell in the collection of Mr. O'Kelly, the intimate friend and associate of the late Dr. Turton; it was marked as English, and as the collection was made during the life-time of the Doctor, had it been Irish, I have no doubt it would have been remarked as a notable addition to the Zoology of Ireland. Until the occurrence of the incident to which I have alluded, I was under the impression that the shell was only to be found in the English seas: but having been met with on the west coast of Ireland, we may expect that not only the English shells, but others, will be obtained by a diligent search, and amply repay the labours of the conchologist.

"In the year 1844, accompanied by Mr. M'Alla, I dredged Roundstone and Birterbie Bays with a success far beyond my most sanguine expectation: however, there was a spot in Birterbie Bay, which we both agreed should be re-investigated, although holding out but little prospect of adding anything new to our collection, inasmuch as we had gone over the ground before, and found that the floor of that part of the bay was covered with a great thickness of dead and decomposed Nulliporæ, and this again coated over by a thick deposit of slimy mud. We had observed that wherever this peculiar formation occurred, our search for shells was fruitless. As we had, in tacking, only crossed this ground, we were determined now to take it in the length, and accordingly gave our steersman orders to commence at the tail of the bank, and bring us up to the head of the inlet. Throwing the dredge overboard, and running it out for a short time, we found on raising it that it was filled to the utmost with the mud and nullipore, which was, as usual, spread on the deck, and into which Mr. M'Alla at once plunged. After having been occupied in examining this fœtid mud for some time, he handed me a fragment of shell very similar to the paring of a human nail, and, in rather an excited manner, asked me what I thought it was. On looking at it, and examining it as well as the uneasy motion of the boat permitted (the wind being fresh), I replied that I conceived it to be a fragment of Bulla Akera. 'No, Sir,' was his prompt reply, 'it must be Bulla hydatis — it will prove a fine addition to the Fauna of Ireland.' On again letting down the dredge, we obtained larger fragments, which you see placed on the card precisely as we found them; and by continuing the course to the head of the inlet, we had the good fortune to obtain the perfect shell, as seen in this bottle, with the animal; it contained about twenty specimens. We were unable to return by the same course from the shoaling of the water, otherwise I could have ascertained the exact locality of our prize; and I have no hesitation in saying, that if ever I am permitted to revisit Birterbie Bay, I shall be able to find Bulla hydatis. This circumstance brings to mind the wonderful perception recorded of some palæontologist, who, from seeing a fragment of a tooth, was enabled to construct and bring to life, as it were, an animal of gigantic frame, which inhabited the surface of our earth in bygone ages; but this was accomplished in the calm and quiet of the study. Poor M'Alla made a near approach to this marvellous act of induction, but under very different circumstances—immersed in a mass of mud and slime, and tossed about by the swelling of an angry sea; however, it is to him alone that the credit of making this interesting addition to the Fauna of Ireland is due.

"On the last occasion when I had the pleasure of bringing before the notice of the Society some notes on the turnstone, the subject was so intimately associated with the memory of the late William Thompson, that I availed myself of the opportunity of recording the high estimation in which it is held by the lovers of Natural History; a similar melancholy task now falls to my lot in mentioning the name of William M'Alla, a most distinguished and enthusiastic naturalist, who, with indomitable zeal, unaided by fortune, has achieved a reputation in the science of Natural History seldom equalled, certainly never surpassed — the several recent standard works on the various branches connected with that science attest this most amply. I select the foregoing incident from a multitude, to exhibit the wonderful quickness of his perception. I had, with Mr. M'Alla, visited the various collections, both private and public, of native shells in the metropolis and elsewhere, and in all we found specimens of Bulla hydatis; but never could obtain from the proprietors or collectors the locality from whence procured, in fact, when pressed, the answer given was that the specimens were English. It is true that Mr. Thompson, in his 'Fauna of Ireland,' indicates the point where this mollusk is to be found; but on asking him for the precise spot, he was unable to point it out, and candidly stated that he had never seen the shell with its animal alive; at the same time he remarked that it would be a great desideratum to obtain it."

Mr. Andrews observed that the indefatigable researches of Dr. Farran, and of the late William M'Alla were well known. They had obtained from the west coast, particularly from the bays and inlets of Connemara, a larger number of the Mollusca and Crustacea, many new to the Fauna of the country, than any other naturalists. The beautiful Melobesia Agariciformis owed its discovery to Dr. Farran. He trusted that as the Museum of the Society was in progress of arrangement, some of his discoveries would be contributed by Dr. Farran.

Mr. Kinahan read a paper "On the Classification and Nomenclature of Ferns."

Wm. M'Dougall, Esq., of Howth, was nominated as a member.

Proceedings of the Society of British Entomologists.

June 7, 1853.—Mr. Harding, President, in the chair.

It was remarked by several members, that in consequence of the backward state of vegetation, owing to the coldness of the weather, many of our early insects did not appear at all, and others were at least two or three weeks later than usual.

The President observed that he could corroborate these remarks from his own experience. For example, he took some fine specimens of Semiophora gothica at the end of May, and many others were at least a month later than at other seasons, and some common species he had not observed at all; while some of the scarcer kinds had made their appearance in greater numbers than usual, for instance, Macaria notaria, Bapta taminaria, and some others. The butterflies seemed unusually scarce; he had seen but one specimen of Hamearis Lucina, although he had been in the woods nearly every day. He had no doubt, from what he had heard, that entomologists generally had met with great disappointment this year up to the present time.

Mr. Harding exhibited a box of insects taken during the past month, containing, among others, the following:—Trochilium Cynipiformis, T. Culiciformis, Sesia Bombyliformis, Lobophora sexalisata, Melanippe hastaria, Bapta taminaria, B. temeraria, and Ephyra Omicronaria.

Boxes of insects were likewise exhibited by several other members.

Mr. Miller was proposed as a member by Mr. Dalman.

In the Report for May (Zool. 3924), for Lithocolletis *alnipaliella* read L. *alnifoliella*.—*J. T. N.*

The Entomological Club.

The usual annual field-day of this little Association was held at Birch Wood, on Thursday, the 7th of July. The following Members and Visitors dined together, Mr. S. Stevens presiding: — Mr. Bennett, Mr. Bevington, Mr. Birkett, F.L.S., Mr. Bowerbank, F.R.S., &c., Mr. Collingwood, Mr. Cuming, F.L.S., Mr. Deane, Pres. Pharm. Soc., Dr. De la Rue, F.R.S., &c., Mr. W. De la Rue, Mr. George, Mr. Gratton, F.R.B.S., Mr. Hanson, Mr. Hirst, Mr. R. Hudson, F.R.S., &c., Mr. Hutchinson, Mr. Janson, F.L.S., Mr. Keddell, Mr. Marchant, Mr. Marsh, Mr. Marshall, Mr. Newman, F.L.S., Pres. Ent. Soc., Mr. Powle, Mr. Salmon, F.L.S., Mr. Saunders, F.R.S., V.P. Ent. Soc., Mr. Scott, Mr. Smee, F.R.S., Mr. Stevens, F.L.S., Mr. Tebbs, Dr. Tyndall, F.R.S., &c., Mr. Wakefield, F.L.S., &c., Mr. Wenham, Mr. Harrison Weir, Mr. Woodward, F.R.S., &c., Mr. Van Voorst, F.L.S., &c., and Mr. Yarrell, V.P.L.S., &c.

Note on the Carnivorous Propensities of the Hedgehog. — The following anecdote, for the accuracy of which I vouch, is not much in accordance with the term "harmless hedgehog" which occurs in the Rev. A. C. Smith's paper in the June number (Zool. 3903). Attached to the foreman's cottage, on the farm of a relative of mine, is the hen-house. Not long since, hearing a very unusual commotion amongst the inmates of the latter, the man went to ascertain the cause; and on entering the place, he found it to proceed chiefly from a nearly full-grown pullet, which was struggling on the ground. On closer inspection, he found that the thigh of the fowl was firmly held by the jaws of a hedgehog, which was very unwilling to relinquish its hold. I scarcely need add that the latter suffered the penalty of death for its temerity. — *J. Catchpool, jun.; Colchester, June* 16, 1853.

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Erratum.—In the June number (Zool. 3911), under the notice of the Occurrence of the White-winged Black Tern at Yarmouth, for George *Trederick*, read George *Frederick*.

To Contributors.—Communications have been received from Dr. Balfour Baikie, C. R. Bree, Esq., C. Buxton, Esq., jun., H. Harpur Crewe, Esq., Rev. J. F. Dawson, Geo. Fitt, Esq., J. Green, Esq., J. H. Gurney, Esq., George Guyon, Esq., Rev. Wm. Henry Hawker, J. R. Kinahan, Esq. (2), Josiah Spode, Esq., and William White Walpole, Esq.

BRITISH NATURAL-HISTORY SOCIETY.—It appears from numerous communications addressed to the Secretary, that it would facilitate the pursuit of Natural History, if the various Mechanical Contrivances used in collecting and preserving Specimens were kept ready-made, and all purchasable at one place in London. Steps are therefore being taken to meet the wishes in this respect of Subscribers to the Society, and the following articles may now be procured at 30, Tavistock Street, Covent Garden, on application to Mr. Edward Willson.

Botanical Collecting-cases and Knives; Bentall's Botanical Drying-paper; Geological Collecting-bags, Hammers and Chisels of various sizes and patterns; Marine Shell-dredges; Insect-boxes for the Pocket, and Lanterns with safety oil-caps; circular Boxes with glass tops, of both card-board and japanned tin; glass Bottle-tubes for Entomological purposes; the same with slips of card, for mounting small Shells and other minute objects; Cabinet Trays for arranging Collections; Boxes of various sizes in wood, tin, and card-board; printed Numbers, from 1 to 2500, for cataloguing Collections, carefully gummed.

In carrying out the above plan, the Secretary would be happy to receive suggestions from Subscribers to the Society, or from any parties engaged in the practical pursuit of Natural History.

York, June, 1853.